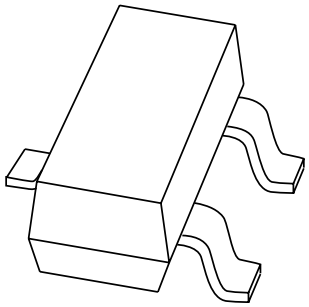
查询PBSS4320T供应商

DATA SHEET



PBSS4320T

20 V low V_{CEsat} NPN transistor

Product specification

2002 Aug 08

Philips
Semiconductors

PHILIPS

20 V low V_{CEsat} NPN transistor PBSS4320T

FEATURES

- Low collector-emitter saturation voltage V_{CEsat} and corresponding low R_{CEsat}
- High collector current capability
- High collector current gain
- Improved efficiency due to reduced heat generation.

APPLICATIONS

- Power management applications
- Low and medium power DC/DC convertors
- Supply line switching
- Battery chargers
- Linear voltage regulation with low voltage drop-out (LDO).

DESCRIPTION

NPN low V_{CEsat} transistor in a SOT23 plastic package.
PNP complement: PBSS5320T.

MARKING

TYPE NUMBER	MARKING CODE(1)
PBSS4320T	ZG∗

Note

1. ∗ = p: Made in Hong Kong.
   ∗ = t: Made in Malaysia.
   ∗ = w: Made in China.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	20	V
I_C	collector current (DC)	2	A
I_{CRP}	repetitive peak collector current	3	A
R_{CEsat}	equivalent on-resistance	105	mΩ

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

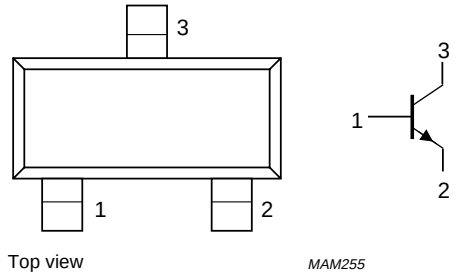


Fig.1 Simplified outline (SOT23) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	20	V
V_{CEO}	collector-emitter voltage	open base	–	20	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_C	collector current (DC)		–	2	A
I_{CRP}	repetitive peak collector current	note 1	–	3	A
I_{CM}	peak collector current	single peak	–	5	A
I_B	base current (DC)		–	0.5	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 2	–	300	mW
		$T_{amb} \leq 25$ °C; note 3	–	480	mW
		$T_{amb} \leq 25$ °C; note 4	–	540	mW
		$T_{amb} \leq 25$ °C; notes 1 and 2	–	1.2	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Notes

1. Operated under pulsed conditions: pulse width $t_p \leq 100$ ms; duty cycle $\delta \leq 0.25$.
2. Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.
3. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm^2.
4. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 6 cm^2.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	in free air; note 1	417	K/W
		in free air; note 2	260	K/W
		in free air; note 3	230	K/W
		in free air; notes 1 and 4	104	K/W

Notes

1. Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.
2. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm^2.
3. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 6 cm^2.
4. Operated under pulsed conditions: pulse width $t_p \leq 100$ ms; duty cycle $\delta \leq 0.25$.

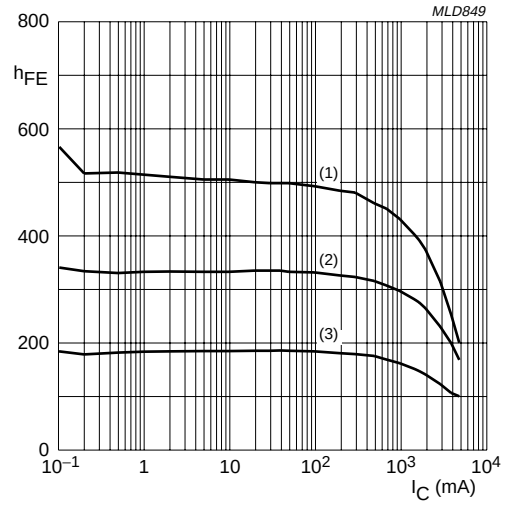
CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	V_{CB} = 20 V; I_E = 0	–	–	100	nA
		V_{CB} = 20 V; I_E = 0; T_j = 150 °C	–	–	50	μA
I_{EBO}	emitter-base cut-off current	V_{EB} = 5 V; I_C = 0	–	–	100	nA
h_{FE}	DC current gain	V_{CE} = 2 V; I_C = 100 mA	220	–	–	
		V_{CE} = 2 V; I_C = 500 mA	220	–	–	
		V_{CE} = 2 V; I_C = 1 A; note 1	220	–	–	
		V_{CE} = 2 V; I_C = 2 A; note 1	200	–	–	
		V_{CE} = 2 V; I_C = 3 A; note 1	150	–	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = 500 mA; I_B = 50 mA	–	–	70	mV
		I_C = 1 A; I_B = 50 mA	–	–	120	mV
		I_C = 2 A; I_B = 40 mA; note 1	–	–	230	mV
		I_C = 2 A; I_B = 200 mA; note 1	–	–	210	mV
		I_C = 3 A; I_B = 300 mA; note 1	–	–	310	mV
R_{CEsat}	equivalent on-resistance	I_C = 2 A; I_B = 200 mA; note 1	–	80	105	mΩ
V_{BEsat}	base-emitter saturation voltage	I_C = 2 A; I_B = 40 mA; note 1	–	–	1.1	V
		I_C = 3 A; I_B = 300 mA; note 1	–	–	1.2	V
V_{BEon}	base-emitter turn-on voltage	V_{CE} = 2 V; I_C = 1 A; note 1	1.2	–	–	V
f_T	transition frequency	I_C = 100 mA; V_{CE} = 5 V; f = 100 MHz	100	–	–	MHz
C_c	collector capacitance	V_{CB} = 10 V; I_E = I_e = 0; f = 1 MHz	–	–	35	pF

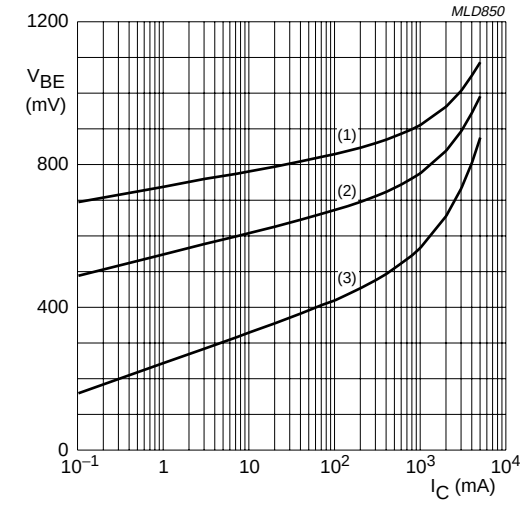
Note

1. Pulse test: $t_p \leq 300$ μs; $\delta \leq 0.02$.



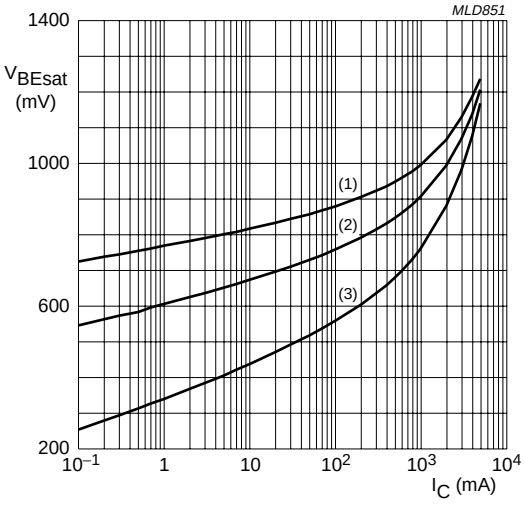
V_{CE} = 2 V.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.2 DC current gain as a function of collector current; typical values.



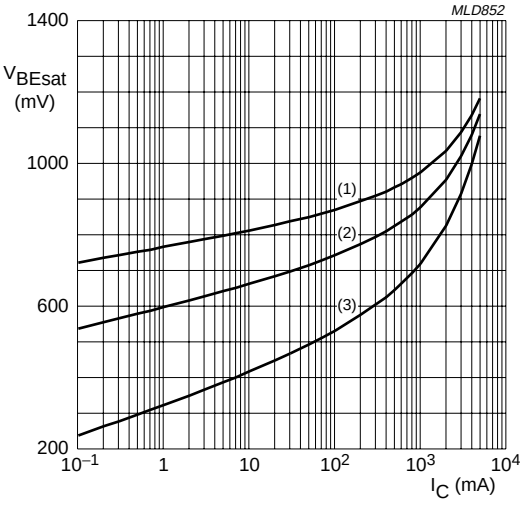
V_{CE} = 2 V.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

Fig.3 Base-emitter voltage as a function of collector current; typical values.



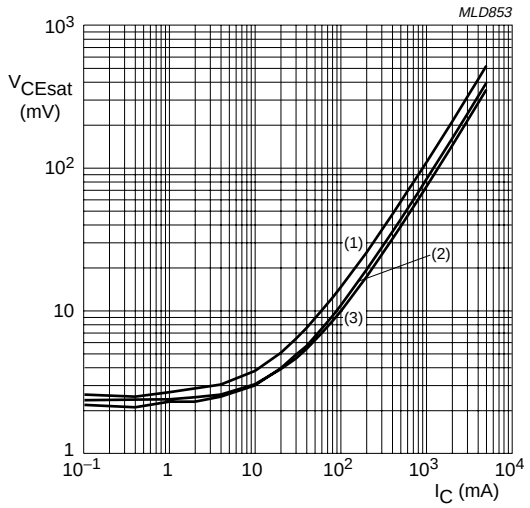
I_C/I_B = 10.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

Fig.4 Base-emitter saturation voltage as a function of collector current; typical values.



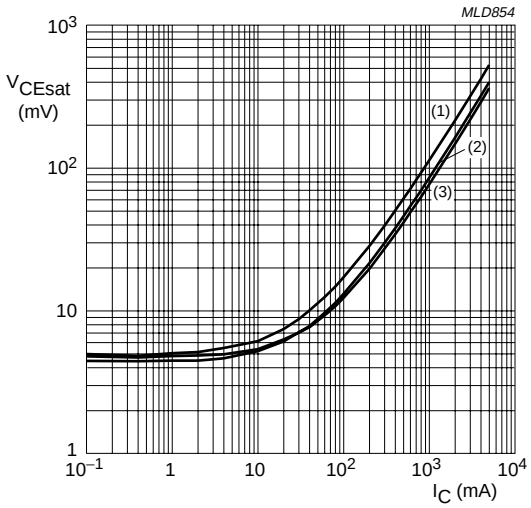
I_C/I_B = 20.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

Fig.5 Base-emitter saturation voltage as a function of collector current; typical values.



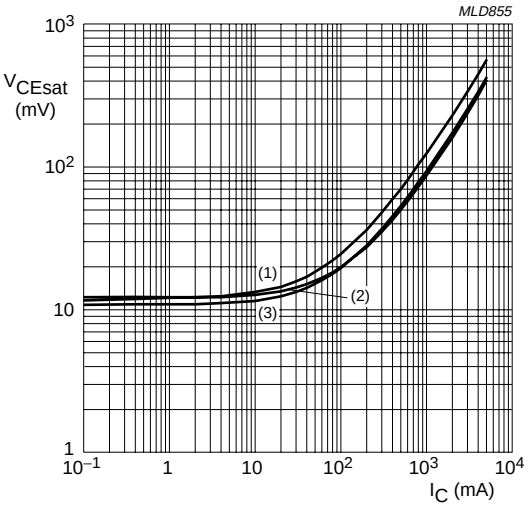
I_C/I_B = 10.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.6 Collector-emitter saturation voltage as a function of collector current; typical values.



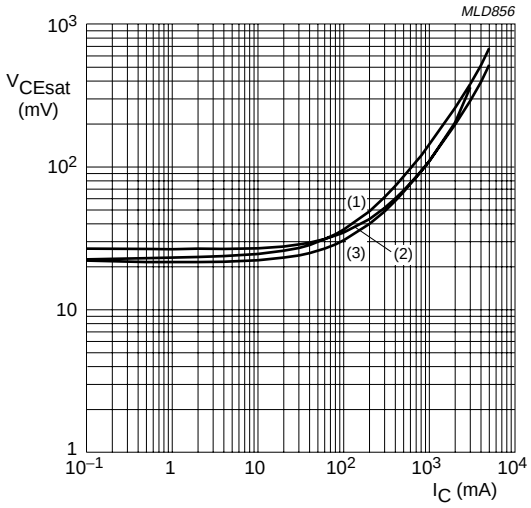
I_C/I_B = 20.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.7 Collector-emitter saturation voltage as a function of collector current; typical values.



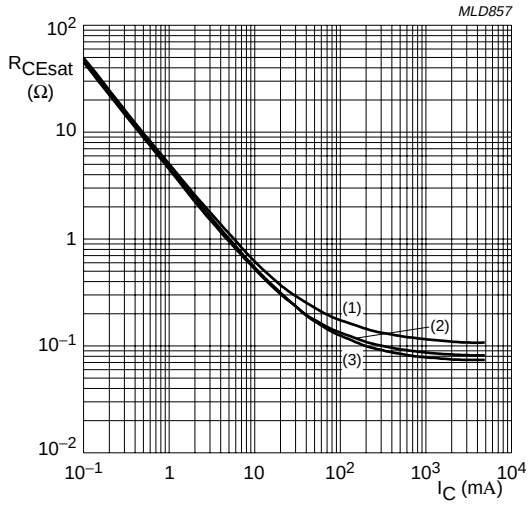
I_C/I_B = 50.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.8 Collector-emitter saturation voltage as a function of collector current; typical values.



I_C/I_B = 100.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.9 Collector-emitter saturation voltage as a function of collector current; typical values.

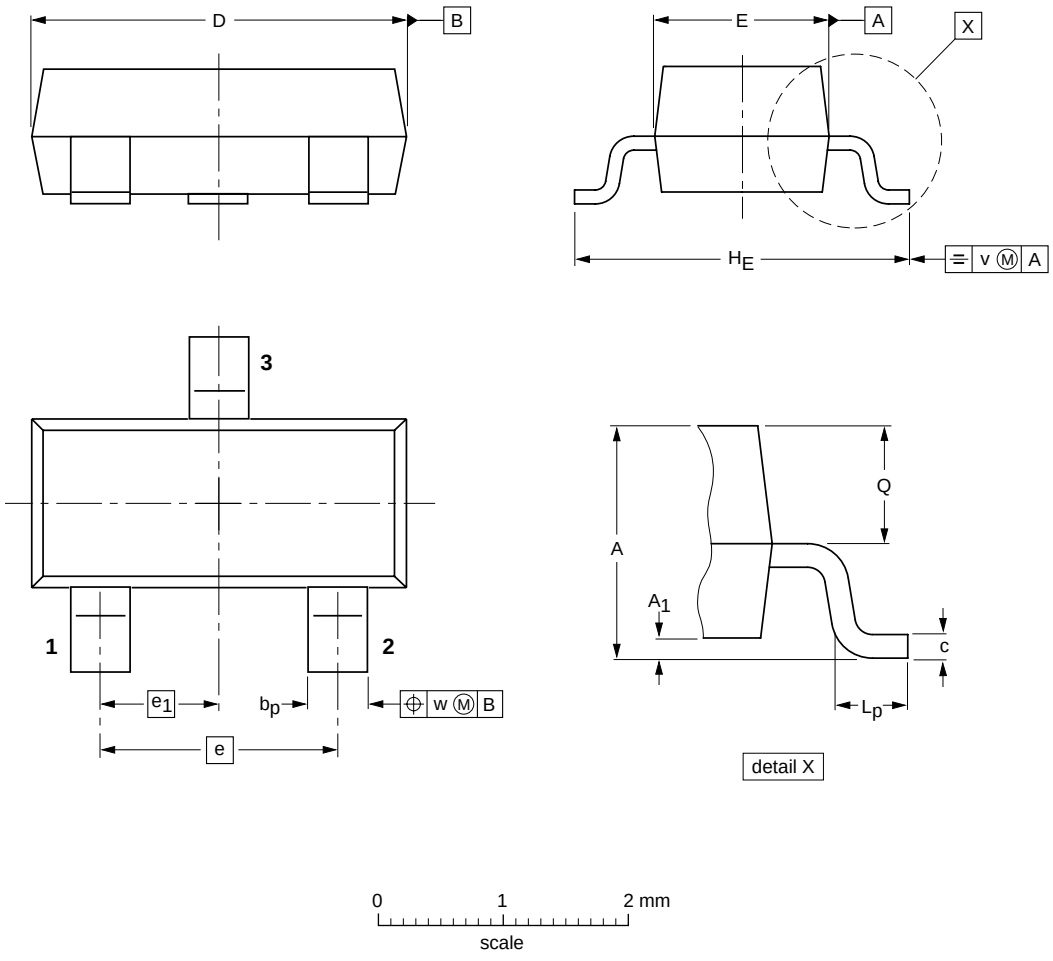


I_C/I_B = 20.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = −55 °C.

Fig.10 Equivalent on-resistance as a function of collector current; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT23**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				~~97-02-28~~ 99-09-13

DATA SHEET STATUS

DATA SHEET STATUS[1]	PRODUCT STATUS[2]	DEFINITIONS
Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A.

Notes

1. Please consult the most recently issued data sheet before initiating or completing a design.
2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

Application information — Applications that are described herein for any of these products are for illustrative purposes only. Philips Semiconductors make no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

DISCLAIMERS

Life support applications — These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips Semiconductors customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips Semiconductors for any damages resulting from such application.

Right to make changes — Philips Semiconductors reserves the right to make changes, without notice, in the products, including circuits, standard cells, and/or software, described or contained herein in order to improve design and/or performance. Philips Semiconductors assumes no responsibility or liability for the use of any of these products, conveys no licence or title under any patent, copyright, or mask work right to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified.

NOTES

NOTES

Philips Semiconductors – a worldwide company

Contact information

For additional information please visit **http://www.semiconductors.philips.com**. Fax: **+31 40 27 24825**
For sales offices addresses send e-mail to: **sales.addresses@www.semiconductors.philips.com**.

© Koninklijke Philips Electronics N.V. 2002 SCA74

All rights are reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.

The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Printed in The Netherlands 613514/01/pp12 Date of release: 2002 Aug 08 Document order number: 9397 750 09915

Let's make things better.

Philips
Semiconductors

PHILIPS